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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,369	04/19/2006	Masaaki Okubo	10873.188SUSWO	9444
52835 7590 05/30/2008 HAMRE, SCHUMANN, MUELLER & LARSON, P.C. P.O. BOX 2902 MINNEAPOLIS, MN 55402-0902				
EXAMINER				
VANOT, TIMOTHY C				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
05/30/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/576,369

**Applicant(s)**

OKUBO ET AL.

**Examiner**

TIMOTHY C. VANOS

**Art Unit**

1793

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 3-20 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-850)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :Apr. 19, 2006; July 13, 2006; Dec. 17, 2007.

***Ex Parte Quayle***

This application is in condition for allowance except for the following formal matters:

- a) The information disclosure statement filed on Apr. 19, 2006 does not fully comply with the requirements of 37 CFR 1.98(b) because the reference "Japan 2000-170,523" is missing.
- b) The information disclosure statement filed on Dec. 17, 2007 does not fully comply with the requirements of 37 CFR 1.98(b) because the publication date is missing for the "Search Report".

Since the submission appears to be *bona fide*, Applicants are given **ONE (1) MONTH** from the date of this notice to supply the above mentioned omissions or corrections in the information disclosure statement. NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b). Failure to timely comply with this notice will result in the above mentioned information disclosure statement being placed in the application file with the noncomplying information **not** being considered. See 37 CFR 1.97(i).

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 25 USPQ 74, 453 O.G. 213, (Comm'r Pat. 1935).

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

***Allowable Subject Matter***

None of the claims have been rejected under either 35USC102 or 35USC103 because Applicants' claim 1 and the claims dependent thereon require a first step of adsorbing target components including NO<sub>x</sub> in the exhaust gas with an adsorbent; introducing a nitrogen gas into the adsorbent, and applying a first non-thermal plasma of the nitrogen gas to the adsorbent thus causing desorption of the target components and regeneration of the adsorbent. In contrast, EP 1 216 746 A1 in its Figure 2 and col. 6 In. 26 to col. 7 In. 5 describes a method in which the exhaust gas is passed through a first plasma reactor (54), which converts NO into NO<sub>2</sub> and oxygen into ozone. Then, the exhaust gas is passed through a particle trap (60) where carbonaceous and sulfate particles are trapped. Further, US 2004/0219084 A1 in its Fig. 8(b) and paragraph no. 0098 shows the injection of hydrocarbons (801) into the exhaust gas (804); then the passage of the hydrocarbons/exhaust gas mixture through a plasma activated oxidizing bed (806), and then the passage of the gas mixture through a zeolite bed (805), which is completely different from what is set forth in Applicants' claim 1 and the claims dependent thereon.

Applicants' claim 10 and the claims dependent thereon have not been rejected under either 35USC102 or 35USC103 because the Applicants' claim 10 requires that the first plasma reactor contains an "adsorption portion" for adsorbing target components including NO<sub>x</sub>. In contrast, EP 1 216 746 A1 provides the corresponding "adsorption portion" as a separate and distinct component (60) from the first plasma reactor (54). This separate and distinct particle trap (60) does not sorb the claimed

NO<sub>x</sub>, but rather sorbs carbonaceous matter and sulfate particles. Please see Fig. 2 and col. 6 ln. 34-39 in EP 1 216 746 A1. The purpose of the first plasma reactor in EP 1 216 746 A1 is to generate NO<sub>2</sub> (please see col. 6 lns. 34-35 in EP 1 216 746 A2), whereas the purpose of the first plasma reactor of Applicants' claim 10 is to sorb NO<sub>x</sub>. Fig. 8(b) in US 2004/0219084 A1 shows the first plasma reactor being what appears to be a catalytic oxidizing bed (please see paragraph no. 0098), but not the Applicants' claimed "adsorbent" for sorbing NO<sub>x</sub>.

***Reference made of record***

The following reference is made of record:

U. S. Pat. 6,146,599 disclosing a dielectric barrier discharge system which includes a first and second non-thermal plasma reactors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY C. VANOY whose telephone number is (571)272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Timothy C Vanoy  
Primary Examiner  
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